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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/539,929	03/31/2000	Shigeru Yao	U-Wp-5525 Aoki	2221

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EXAMINER
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ROCHE, LEANNA M

ART UNIT	PAPER NUMBER
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1771

DATE MAILED: 12/19/2002

15

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/539,929

Applicant(s)

YAO ET AL.

Examiner

Leanna Roche

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 9/26/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,7,10 and 12-20 is/are pending in the application.
- 4a) Of the above claim(s) 12-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,7,10 and 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. The amendments filed September 26, 2002 have been entered and carefully considered. Claims 1-4, 6-7, 10 and 15-20 are pending for examination in this application. Claims 12-14 have been withdrawn from further consideration.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6, 7, 10, 15-18 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tomioka et al. (USPN 5510395).

Tomioka discloses a fine porous film of a polyimide having excellent heat resistance and dynamic characteristics which may be used as an insulating film. The

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pore size of Tomioka, 0.05 to 10  $\mu\text{m}$  (Column 9, line 66 - Column 10, line 1), reads on Applicant's mean pore size ranges. The porosity of Tomioka, 2 to 70% (Column 10, lines 30-31), reads on Applicant's claimed porosity ranges. The film of Tomioka is formed from a mixture of pyromellitic dianhydride and diaminodiphenyl ether (Examples 1 to 4). This reads on Applicant's film consisting essentially of a polyimide obtained from the combination of at least one tetracarboxylic acid component and a diamine component. The thickness of Tomioka is from 5 to 100  $\mu\text{m}$  (Column 10, lines 31-32). The film of Tomioka is formed by casting. The dielectric constant of Tomioka ranges from 1.5 to 3.0. Tomioka discloses that the gas permeability of their film may range from almost zero to 7.0  $\text{cm}^3/\text{cm}^2 \cdot \text{sec} \cdot \text{cmHg}$  or more. This reads on Applicant's claimed resistance to the passage of air. It is known in the art that polyimides have a heat resistance of greater than 200°C (USPN 6115514, Column 15, lines 34-35).

Tomioka does not specifically disclose a porous structure having fine continuous pores reaching to both surfaces of the film. However, it appears that porous polyimide film of Tomioka is substantially identical to the presently claimed porous insulating film because both are comprised of the exact same materials, both disclose pore sizes within the same range, both disclose porosities within the same range, both disclose thicknesses within the same range, both disclose dielectric constants within the same range, and both are formed by substantially the same process. Thus, it is believed by the examiner that porous polyimide film of Tomioka inherently possesses fine continuous pores reaching to both surfaces of the film as claimed by Applicant. Additionally, the presently claimed fine continuous pores reaching to both surfaces of

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the film would have obviously been present once the porous polyimide film of Tomioka was provided. See *In re Best*, 195 USPQ 433 footnote 4 (CCPA 1977) as to the providing or this rejection under 35 USC 102 as well as 35 USC 103.

Tomioka does not specifically disclose that their film has a heat shrinkage of no greater than  $\pm 1\%$ . However, it appears that the porous polyimide film of Tomioka is substantially identical to the presently claimed porous insulating film because both may be comprised of the exact same materials, both disclose pore sizes within the same range, both disclose porosities within the same range, both disclose thicknesses within the same range, both disclose dielectric constants within the same range, and both are formed by substantially the same process. Thus, it is believed by the examiner that the porous polyimide film of Tomioka would inherently possess a heat shrinkage of no greater than  $\pm 1\%$ . Additionally, the presently claimed heat shrinkage of no greater than  $\pm 1\%$  would have obviously been present once the porous polyimide film of Tomioka was provided. See *In re Best*, 195 USPQ 433 footnote 4 (CCPA 1977) as to the providing or this rejection under 35 USC 102 as well as 35 USC 103.

While Tomioka does not specifically disclose being used as a battery separator, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458,

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459 (CCPA 1963). Therefore, because Tomioka either literally or inherently reads on all of the structural limitations of Claims 1 and 15, Tomioka reads on Applicant's claimed battery separator.

With regards to newly added claims 16 and 17, Tomioka discloses using a pyromellitic dianhydride and a diaminodiphenylether.

With regard to newly added claims 18 and 20, Tomioka does not specifically disclose pores in the porous structure arranged in the film substantially parallel to the film surfaces. However, it appears that porous polyimide film of Tomioka is substantially identical to the presently claimed porous insulating film because both are comprised of the exact same materials, both disclose pore sizes within the same range, both disclose porosities within the same range, both disclose thicknesses within the same range, both disclose dielectric constants within the same range, and both are formed by substantially the same process. Thus, it is believed by the examiner that porous polyimide film of Tomioka inherently possesses pores in the porous structure arranged in the film substantially parallel to the film surfaces as claimed by Applicant. Additionally, the presently claimed pores in the porous structure arranged in the film substantially parallel to the film surfaces would have obviously been present once the porous polyimide film of Tomioka was provided. See *In re Best*, 195 USPQ 433 footnote 4 (CCPA 1977) as to the providing or this rejection under 35 USC 102 as well as 35 USC 103.

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5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomioka et al. (USPN 5510395) as applied to claims 1, 10 and 16 above, and further in view of Makino et al. (USPN 4474662).

Tomioka teaches using a pyromellitic dianhydride component rather than using 3,3',4,4'-biphenyltetracarboxylic dianhydride as the tetracarboxylic acid component. Makino teaches a porous aromatic polyimide membrane formed from an aromatic tetracarboxylic component and an aromatic diamine component. Makino discloses that both 3,3',4,4'-biphenyltetracarboxylic dianhydride and pyromellitic dianhydride may be used as the aromatic tetracarboxylic acid compound. Therefore, it would have been obvious to the skilled artisan at the time this invention was made to use 3,3',4,4'-biphenyltetracarboxylic dianhydride in place of the pyromellitic dianhydride of Tomioka since the equivalence of 3,3',4,4'-biphenyltetracarboxylic dianhydride and pyromellitic dianhydride is known in the art of porous polyimide formation, and the selection of any of these known equivalents to form the porous polyimide film would have been within the level of ordinary skill in the art and obvious motivated by cost and/or availability.

### ***Response to Arguments***

6. Applicant's amendment to Claim 10 is sufficient to overcome the previous objection of Claims 10 and 15 in Paper No. 10, paragraph 2. Applicant's cancellation of Claim 5 is sufficient to overcome the previous objection to Claim 5 in Paper No. 10, paragraph 3.

7. Applicant's arguments with respect to Michaels (USPN 4450198) and Fujii et al. (USPN 4824743) have been considered but are moot in view of the new ground(s) of rejection.

8. With regards to Tomioka et al., Applicant contends that the examples of Tomioka have elliptic pores of a width of not more than 3  $\mu\text{m}$  and a length of not more than 7  $\mu\text{m}$ , and that therefore, Tomioka does not disclose a porous film having continuous channels. The elliptic pore measurements disclosed in Tomioka were obtained using SEM images viewed in a direction perpendicular to the surface of the film (see Column 12, lines 1-11). The examiner contends that this method of viewing would result in an image similar to that shown in Applicant's Figure 7, which depicts a scanning electron microscope photograph of the surface of the porous polyimide film. Therefore, the measurements disclosed by Tomioka are reflective of pore size values at the surface of the film and would not be evidence of a lack of continuous channels within the porous polyimide film. It is noted that Applicant's evidence of continuous channels is exemplified by an SEM image of a **cross-section** of a porous polyimide film.

9. With regard to Applicant's arguments that the differences in the production process of the porous films of Tomioka and Applicant's invention account for the lack of disclosure by Tomioka of a porous film having continuous channels, it is well-established that "the arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965)". Therefore, this argument must be supported by an appropriate affidavit or declaration directed to facts from data which support Applicant's assertions. If Applicant intends to



rely on Examples in the specification or in a submitted Declaration to show non-obviousness, Applicant should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with the prior art.

10. Also, it appears that Applicant is contending that a process limitation produces the unexpected results. Therefore, the examiner would advise Applicant to consider a product claim which incorporates the necessary process limitations, to better illuminate Applicant's contribution to the art.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. GB 2101137 is related to Makino et al. (USPN 4474662).

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leanna Roche whose telephone number is 703-308-6549. The examiner can normally be reached on Monday through Friday from 8:30 am to 6:00 pm (with alternate Mondays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



lmr  
December 10, 2002



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